

EXHIBIT B

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CLEARCORRECT OPERATING, LLC
Petitioner

v.

ALIGN TECHNOLOGY, INC.
Patent Owner

Case IPR2017-01829
Patent 8,038,444

PATENT OWNER'S PRELIMINARY RESPONSE

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EXHIBIT LIST

Exhibit No.	Description
2001	U.S. Patent 9,326,830 to Kitching et al., issued May 3, 2016, which is a continuation of U.S. Patent 8,038,444
2002	Vicci, L. “Quaternions and Rotations in 3-Space: The Algebra and its Geometric Interpretation” April 27, 2001.

I. Introduction

The Petition is replete with both claim construction and procedural errors – any of which alone has been held to be fatal to institution. And when considered in the aggregate, the Petition must be denied.

There are at least three fatal claim construction errors. **First**, Petitioner fails to account for the claim language, specification, and case law, such that Petitioner used the wrong claim construction when attempting to apply references to a key claim feature that requires assessment of staggering *and* round-tripping, and not one *or* the other, to ensure “an order of movement for each respective dental object such that the dental objects avoid colliding with or obstructing each other on their respective routes from said initial position to said desired final position.” Under the correct construction, none of the applied references can legally meet the claims. **Second**, Petitioner fails to provide the Board and Patent Owner notice of what they believe “staggering” means by changing the meaning of the claimed “staggering” depending on what reference they attempt to read on the claim. **Third**, knowing that the Rules and Board always require construction of means-plus-function claims, regardless if Petitioner asserts indefiniteness, Petitioner provides no indication of what they consider the function-structure characteristics of claims 15-28 are before attempting to apply the references to the claims.

Equally as fatal, the Petition includes several procedural errors. Most problematic is that Petitioner relies on unexplained claim charts with many gaps between the claim terms and language of the applied references. Almost as egregious is that, except for three claims (dependent claims 6, 20, and 34) there is *no evidence*, including *no declarative evidence*, for any of the attorney arguments relied upon in the Petition. None.

The Petition is also dead silent with respect to a key claim term: “determin[ation], by the host computer, an order of movement for each respective dental object.” Inexplicably, Petitioner never maps the language it relies on from Chishti’876 or Chishti’511 to the completely different terms found in the claim language.

Further, to circumvent the word limits, Petitioner relies on claim 1 Grounds for claim 29. There is only one problem—claim 1 recites different features than claim 29—which leaves no indication how “receive an electronic representation of each dental object in relation to one another in an initial position” is met by either Chishti’876 or Chishti’511. Continuing with the theme of circumventing the word limits of a Petition, the Petitioner follows simple, short sentences with citations to large swathes of the declaration – amounting to incorporation by reference of over 3,000 words from the declaration into the Petition. Given that the Petition was

allegedly just a few words under the word limit, the Board should find that it is in fact almost 20% over the word limit.

The Petitioner's final set of errors includes conclusory inherency arguments to fill in all the gaps left in the applied references and admitted redundancy in the Grounds. Furthermore, Petitioner admits that Ground 1 should be denied if the Board disagrees, as it should, with the Petitioner's incorrect reading of the Staggering and Round-Tripping feature recited in claim 1. And Petitioner provides absolutely *no* reason why they included two Grounds with full knowledge that the Board has required such explanation for vertically or horizontally redundant Grounds.

These numerous fatal claim construction and procedural errors cry out for denial of institution.

II. The Petition is replete with fatal claim construction errors.

- A. The claims require assessment of both “staggering” and “round-tripping” of at least one dental object to ensure “an order of movement for each respective dental object such that the dental objects avoid colliding with or obstructing each other on their respective routes from said initial position to said desired final position” – Not one or the other as construed by the Petitioner. (All Grounds – Claim 1)**

The Petition makes an explicit construction of “through at least one of staggering and round-tripping of at least one dental object” (hereinafter “Staggering and Round-Tripping”) to mean that disclosure of either “staggering”

or “round-tripping” is sufficient to teach these features, which ignores the context of the claimed feature – namely, to avoid dental objects “colliding with or obstructing” with each other. (Pet., 18, 26-27, 50.) In support of their construction, the Petitioner asserts that the features “staggering and round-tripping” are part of a *Markush* group. However, contrary to Petitioner’s assertion, the correct construction of Staggering and Round-Tripping requires assessment of both “staggering” and “round-tripping” when avoiding “colliding with or obstructing” between dental objects and not one or the other for at least three reasons.¹

First, Staggering and Round-Tripping do not form a *Markush* group, because a *Markush* group, as defined by Federal Circuit precedents, requires the use of the “closed language” transition terms “consisting of” and is typically in the form of “a

¹ Indeed, Petitioner appears to even acknowledge the plain and ordinary meaning of “at least one of X and Y” in its discussion of claim 4, which recites “adjusting **at least one of** the route **and** the rate of at least one dental object.” (Ex. 1001, claim 4.) However, rather than arguing for a *Markush* group, Petitioner alleges that the applied references in their respective grounds teach both elements. (Pet., 30-31, 52-53.)

member **selected from the group consisting of A, B, and C.**² *Abbott Labs. v.*

Baxter Pharma. Prod., Inc., 334 F.3d 1274, 1280–81 (Fed. Cir. 2003). None of these terms appear in Staggering and Round-Tripping.

Second, under plain and ordinary meaning as instructed by *SuperGuide Corp. v. DirectTV Enterprises, Inc.*, Staggering and Round-Tripping require both “staggering and round-tripping” rather than one or the other, 358 F.3d 870, 886 (Fed. Cir. 2004). This conjunctive construction is consistent with the dependent claims and the Specification of the ’444 Patent, as well as the claims of a continuation of the ’444 Patent.

Finally, Petitioner’s incorrect construction and failure to provide any evidence that the plain and ordinary meaning does not apply is fatal to its burden in proving unpatentability with respect to at least Ground 1.

1. No legal precedent supports Staggering and Round-Tripping being a *Markush* group.

For claim language to be a *Markush* group, the listed alternatives must be introduced with a closed-ended transitional phrase. *Abbott Labs*, 334 F.3d at 1280-81. In *Abbott Labs*, the Federal Circuit explained that a “Markush group, incorporated in a claim, should be ‘closed,’ i.e. **it must be characterized with the**

² All emphasis added unless otherwise noted.

transition phrase ‘consisting of,’ rather than ‘comprising’ or ‘including.’” *Id.* It is also well established that “[a] *Markush* group is a listing of specified alternatives of a group in a patent claim, [that is] typically expressed in the form: a member **selected from the group consisting of A, B, and C.**” *Id.* Here, it is clear that none of the hallmarks that identify a *Markush* group are present within Staggering and Round-Tripping. In addition to lacking the typical “group” phrasing, the claims plainly lack the closed-ended terminology that is a requirement for *Markush* groups.

Petitioner’s reliance on *Fresenius* to support its *Markush* group argument is misplaced, as this case only confirms that *Markush* groups require closed-ended transitions. The Federal Circuit in that case identified “the dialysate-delivery system comprising at least one unit **selected from the group consisting of:** i) [W], (ii) [X], (iii) [Y], and (iv) [Z]” as a *Markush* group, which is consistent with the closed-ended requirement set forth in *Abbott Labs. Fresenius USA, Inc. v. Baxter Int’l, Inc.*, 582 F.3d 1288, 1298 (Fed. Cir. 2009). Accordingly, Staggering and Round-Tripping do not form a *Markush* group under established Federal Circuit precedents.

While *Markush* groups are not the only way to claim alternatives, Petitioner never argues that such interpretations might apply. Petitioner even acknowledges in its presentation of Ground 2 that both staggering and round-tripping are required

if the feature is not a *Markush* group. In Ground 2, Petitioner states “[i]f this element is *not* considered to be equivalent to a *Markush* group...”³ and then alleges that the cited references teach *both* staggering and round-tripping. (Pet., 50.) In other words, the proposed grounds present a binary choice: the feature is either a *Markush* group (which it facially is not) or both “staggering” and “round-tripping” are required.

Regardless, as explained in the following section, there is no support for any interpretation of the claims—as a *Markush* group or otherwise—that does not require assessment of both staggering and round-tripping.

2. Under *SuperGuide*, Staggering and Round-Tripping requires assessment of both “staggering” and “round-tripping.”

Contrary to Petitioner’s flawed argument that the Staggering and Round-Tripping features form a *Markush* group where disclosure of either “staggering” or “round-tripping” is sufficient, (Pet., 18, 26-27, 50), the Federal Circuit in *SuperGuide* has specifically construed a similar feature as requiring both elements. 358 F.3d at 886.

According to *SuperGuide*, under plain and ordinary meaning, when a patentee uses “at least one of” to precede a list of multiple members and uses the

³ Emphasis included in original.

conjunctive term “and” rather than “or” to separate the members, the “at least one of” would modify each members of the list. *Id.* The claimed list is thus conjunctive rather than disjunctive and requires all members of the list. *Id.* Such construction under plain and ordinary meaning is also equally applicable under broadest reasonable interpretation in the context of *inter partes* reviews (hereinafter “IPR”) as set forth in *In re Cuozzo. Straight Path IP Grp., Inc. v. Sipnet EU S.R.O.*, 806 F.3d 1356, 1360-63 (Fed. Cir. 2015) (holding that the Board, under the broadest-reasonable-interpretation standard, erred when it adopted a claim construction that contradicts the plain and ordinary meaning).

In contrast to *SuperGuide*, the Federal Circuit has interpreted a list using the disjunctive term “or” instead of the conjunctive “and” as a disjunctive list that is satisfied by any single element. *Brown v. 3M*, 265 F.3d 1349, 1352 (Fed. Cir. 2001) (affirming the construction of the phrase “**at least one of [X], [Y], or [Z]**” to mean “only [X], only [Y], only [Z], **or any combination of [X], [Y], and [Z]**”)

Here, the claims use the conjunctive “and,” as in *SuperGuide*, rather than the disjunctive term “or,” as in *Brown*. Thus, according to *SuperGuide*, the “at least one of” preceding the “staggering **and** round-tripping” connotes a conjunctive list rather than a disjunctive list.

As such, under the plain and ordinary meaning as instructed by *SuperGuide*, assessment of both “staggering” and “round tripping” with respect to avoiding

collisions with or obstructions between “at least one dental object” is required to meet the claimed features.

3. The claims and the Specification of the '444 Patent, as well as the claims of a continuation of the '444 Patent, are all consistent with requiring assessment of both “staggering and round-tripping” and not one or the other.

While *SuperGuide* instructs that the plain and ordinary meaning of Staggering and Round-Tripping requires both “staggering” and “round-tripping,” be assessed for the operation claimed, *SuperGuide* also looked to specification to determine whether the presumption that the patentee **intended** the plain and ordinary meaning can be rebutted. 358 F.3d at 887. Indeed some courts have distinguished *SuperGuide* because a conjunctive list would have been inconsistent with the context of the claim or the specification. *Joao v. Sleepy Hollow Bank*, 348 F. Supp. 2d 120, 124 (S.D.N.Y. 2004) (“A single banking transaction cannot be all four, so reading the disputed phrase additively—while grammatically correct—means it does not make any sense.”); *LMT Mercer Grp., Inc. v. Maine Ornamental, LLC*, 2014 WL 183823, *27 (D.N.J. Jan. 16, 2014) (“In *Joao* [], the primary reason the court construed ‘at least one of ... and’ to mean ‘at least one of ... or’ was because the former construction would be nonsensical in the context of the patent at issue.”)

Here, the assessment of both “staggering” and “round-tripping” with respect to avoiding collisions with or obstructions between “at least one dental object” is

consistent with what a person having ordinary skill in the art (“POSA”) would have understood in light of the ’444 Patent. For example, claim 1 of the ’444 Patent explicitly recites:

determining, by the host computer, an order of movement for each respective dental object such that the dental objects avoid colliding with or obstructing each other on their respective routes from said initial position to said desired final position **through at least one of staggering and round-tripping of at least one dental object.** (Ex. 1001, Claim 1.)

Consistent with the above claim features, FIG. 2B of the ’444 Patent as reproduced and annotated below illustrates “a flow diagram [having] a plurality of [movement] patterns and options available to a computing device for optimizing the movement of a patient’s teeth during treatment.”

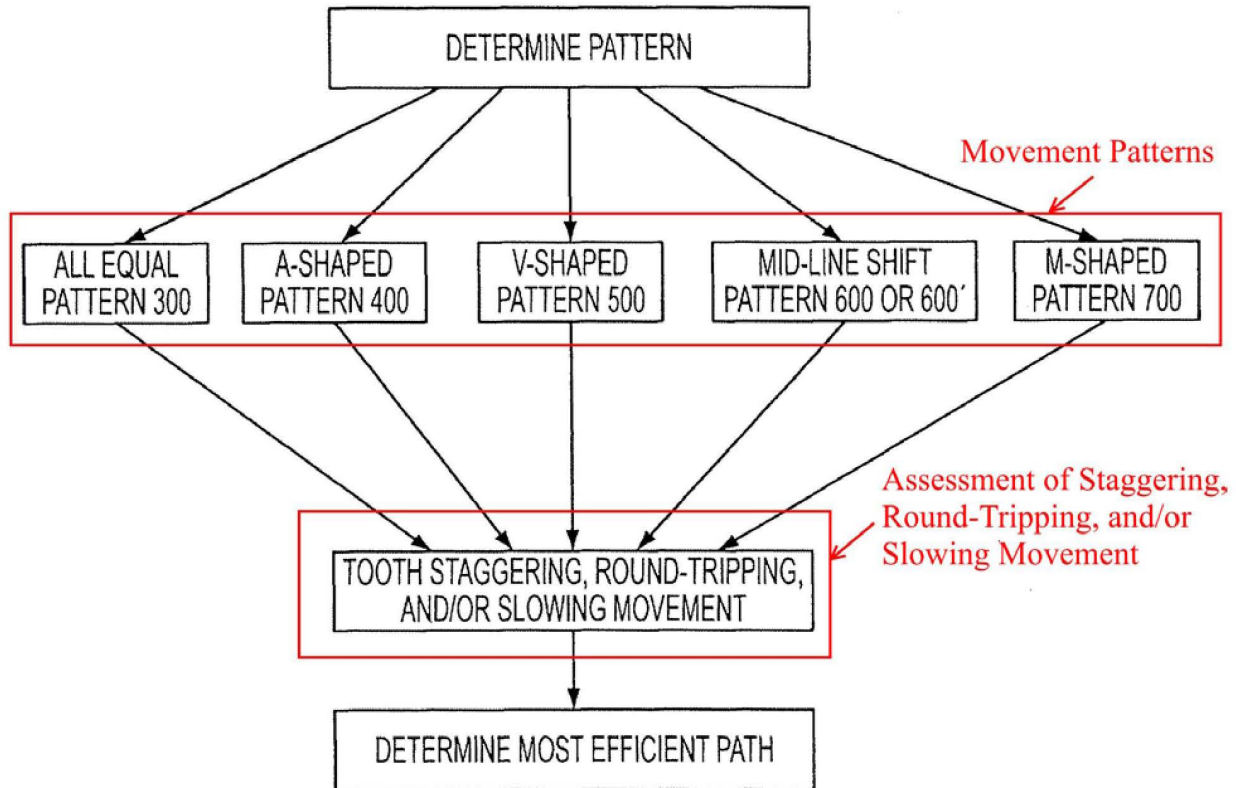


FIG. 2B

(*Id.*, 2:34-36; FIG. 2B.)

In the context of “determining . . . an order of movement for each respective dental object,” the Specification discloses that after deciding on a movement pattern to use, which identifies an order of movement of each tooth (*Id.*, 6:27-31; 5:41-60; 7:47-8:4), the host computer is to further determine whether the selected movement pattern should be modified to accommodate teeth movement to avoid collision:

After the [host computer] has decided which [movement] pattern to utilize, the [host computer] is configured to determine, if the

[movement] pattern should be modified to accommodate the teeth movement of the current patient to avoid collision. (*Id.*, 6:27-31.)⁴

To avoid collisions, the Specification discloses that the host computer may be configured to assess several non-mutually exclusive options which include staggering and round tripping as those recited in claim 1:

In one embodiment, the [host computer] is configured to “stagger”, “round trip” and/or slow the movement (each of which is discussed below, respectively) of one or more teeth if the patient’s teeth cannot be moved without colliding with and/or obstructing another tooth/teeth. Based on that assessment, the program determines the most efficient path to take through some combination of [movement] patterns and accommodation of movement thereof. (*Id.*, 6:39-46.)

Furthermore, while the Specification discloses “and/or” in the list of options to consider rather than “and” as recited in the claim 1, the Federal Circuit has explicitly rejected attempts to rewrite “and” to mean “or” when the specification

⁴ While the ’444 Patent explicitly teaches “system user and/or computer program,” claim 1 explicitly requires that a “host computer” performs these functions, which is consistent with the Specification. (Ex. 1001, 6:15-19.) (“[I]n accordance with another exemplary embodiment, **the computer program** can be suitably configured to determine and select such a pattern.”)

supports either construction. *Medgraph, Inc. v. Medtronic, Inc.*, 843 F.3d 942, 950 (Fed. Cir. 2016) (holding that the written description does not compel a disjunctive construction for “and,” and as such, the claim term should be given its plain and ordinary meaning).

Thus, the Specification is consistent with the plain and ordinary meaning of Staggering and Round-Tripping requiring both rather than one or the other.

Additionally, under principles of claim differentiation, the understanding that Staggering and Round-Tripping requires the assessment of several non-mutually exclusive options is also consistent with dependent claim 13. *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1376 (Fed. Cir. 2014) (independent claims are presumed to be broader than dependent claims). For example, in contrast to claim 1, dependent claim 13 explicitly recites the gerundial phrase “round tripping” as a separate additional step in the context of determining the order of movement previously recited in claim 1:

The computer-implemented method of claim 1, **wherein determining the order of movement step comprises, round tripping** at least one dental object. (Ex. 1001, claim 13.)

Indeed, had the Patent Owner intended “and” to mean “or,” the Patent Owner would have explicitly used “or.” In fact, this is precisely what the Patent Owner has done with respect to similar features in claims of a continuation of

the '444 Patent. For example, claim 1 of the '830 Patent, which is the continuation of the '444 Patent, in relevant part, recites:

modifying, by the host computer, the computer-selected movement pattern **at least by staggering *or* round-tripping at least one dental object** of the plurality of dental objects so as to avoid collision or obstruction of the plurality of dental objects on their respective routes to their corrected positions. ('830 Patent, Ex. 2001, claim 1.)

Similarly, claim 8 of the '830 Patent recites:

The computer-implemented method of claim 7, wherein modifying the computer-selected movement pattern comprises **at least one of staggering *or* round-tripping at least one of the plurality of dental objects**. (*Id.*, claim 8.)

And the Federal Circuit has specifically construed such features as a disjunctive list that includes any single element or any combinations of those elements. *SuperGuide*, 358 F.3d at 898 n. 10 (citing *Brown v. 3M*).

Accordingly, construing Staggering and Round-Tripping as a conjunctive list and thus requiring assessment of both “staggering and round-tripping” is consistent with the '444 Patent claims and the Specification, as well as the claims of the related '830 Patent.

4. Petitioner offers no evidence that the plain and ordinary meaning does not apply, and its failure to provide a correct construction of this feature is fatal to at least Ground 1.

Petitioner's failure to offer evidence supporting a key proposed construction of a feature that runs counter to its plain and ordinary meaning is fatal at least to Ground 1. Petitioner was obligated to explain how the challenged claim is to be construed and to identify specific portions of evidence that support its challenge. 37 C.F.R. §§ 42.104(b)(3) and (5). Contrary to this requirement, Petitioner does not identify any support in the specification that would rebut the presumption that the plain and ordinary meaning applies, nor does Petitioner offer any expert testimony regarding how one of ordinary skill would have understood this feature in light of the specification. (Pet., 18.) Support for the proposed construction is in fact limited to a single case citation that does not actually support Petitioner's position. Lacking any evidence supporting its proposed construction of a key feature, the Petition does not satisfy the threshold requirements of Rule 104(b), nor can it carry Petitioner's burden of proving unpatentability.

B. Petitioner improperly provides inconsistent claim construction for "staggering," robbing the Board and Patent Owner of notice what Petitioner actually thinks this term means and how the references are applied to its construction. (All Grounds – Claims 1, 12, 26, and 40)

Petitioner was required to provide notice to the Board and Patent Owner of one definition of each of the claims terms, not two, and explain how Petitioner

maps the references to that one definition. 35 U.S.C. § 312(a)(3) and 37 C.F.R. §§ 42.104(b)(3), 42.104(b)(4), and 42.22(a)(2). But Petitioner failed this simple task.

Petitioner provides a first construction of “staggering” as “delaying one or more teeth from moving one or more stages where it would otherwise move in order to prevent another tooth from colliding with and/or obstructing the path of the delayed tooth.” (Pet., 17.) When applying Chishti’876 to claim 1, however, Petitioner refers to an entirely different definition of “staggering,” stating “[a]s would be understood by a POSITA, this is equivalent to staggering as discussed above, **meaning determining movement patterns so that movement of particular teeth does not occur at the same time**, and as explained in the ’444 patent. (Ex. 1003 ¶¶ 72-73.)” (*Id.*, 26-27.) Petitioner continues to make this mistake throughout the Petition. (*Id.*, 36, 40, 43 (applying a different definition of “staggering” to dependent claims 12, 26, and 40), 50 (applying the inconsistent definition to claim 1 in Ground 2).)

Lacking a consistent construction for “staggering” and an explanation of how the references meet that one construction, the Petition fails to give the Board and Patent Owner the requisite notice of the basis for Petitioner’s challenge. This moving target forces the Board and Patent Owner to guess as to how Petitioner is actually interpreting the claims. Therefore, institution should be denied on this basis alone at least for claims 1-14, 26, and 40.

C. The Petition must be denied for mean-plus-function (MPF) claims 15-28 because Petitioner failed to provide the required claim construction under Rule 42.104(b)(3). (All Grounds – Claims 15-28)

For claims containing means-plus-function features, the Rules state that “the construction of the claim **must** identify the specific portions of the specification that describe the structure, material, or acts corresponding to each claimed function.” 37 C.F.R. §42.104(b)(3). As explained in *Medtronic, Inc. v. Advanced Cardiovascular, Inc.*, construing a means-plus-function feature is a two-step process., 248 F.3d 1303, 1311 (Fed. Cir. 2001). “The first step in construing such a limitation is a determination of the function of the means-plus-function limitation.” *Id.* (citation omitted). “The next step is to determine the corresponding structure described in the specification and equivalents thereof.” *Id.*

Yet Petitioner ignores this requirement of the Rules and law in at least two ways – **first**, Petitioner does not provide the Board or Patent Owner notice of what functions they are associating with the MPF features; and **second**, Petitioner does not provide the Board or Patent Owner notice of what structures and their equivalents (e.g., algorithms) allegedly correspond to the claimed functions. Petitioner’s failure is fatal for claims 15-28.

First, Petitioner admits claims 15-28 are MPF claims, stating:

Claims 15-28 of the ‘444 patent are all directed to a “system for staging the movement of a plurality of dental objects” including

“means for” performing certain functions. In fact, claims 15-28 do not appear to include any non-“means” elements. **These limitations invoke 35 U.S.C. § 112, ¶ 6**, because they recite “means for” performing functions, and are not modified by sufficient structure, material, or acts for achieving the specified functions. (Pet., 18.)

Then, having admitted they are MPF claims, Petitioner goes on to ignore the explicit requirements of Rule 104(b)(3). Petitioner does not identify the function of **any** feature of claims 15-28 **anywhere** in the claim construction section or any other place in the Petition. Petitioner’s failure to identify these functions as required by the first step of *Medtronic* is fatal to its burden in proving unpatentability of these claims.

Second, Petitioner similarly fails to identify the corresponding structure for that function. These oversights are fatal because the “Rules specifically require that a petition for [IPR must] identify how each challenged claim is to be construed, including identification of the corresponding structure for means-plus-function limitation.” *Kingston Technology Company, Inc. v. SPEX Technologies, Inc.* IPR2017-00824, Paper 8, 9 (P.T.A.B., Aug. 17, 2017) (Denying Institution). And “[b]y failing to identify the corresponding structure or to provide even the alleged prior constructions, the Petition does not show how the challenged claims are to be construed, see 37 C.F.R. § 42.104(b)(3), and also does not show how, as so construed, they are unpatentable under the statutory ground identified in the

Petition.” *Apple, Inc. v. Contentguard Holdings, Inc.*, IPR2015-00456, Paper 9, 10 (P.T.A.B., June 15, 2015) (Denying Institution).

“Petitioner’s assertion that the claim terms are indefinite does not excuse Petitioner’s failure to provide the required claim construction.” *Carefusion Corp. v. Baxter Int’l Inc.*, IPR2016-01456, Paper 9, at 9-10 (P.T.A.B. Feb. 6, 2017) (“The scope of an *inter partes* review is limited to grounds that could be raised under 35 U.S.C. §§ 102 and 103. 35 U.S.C. §311(b). Indefiniteness is not one of those grounds.”) (Denying Institution). As in *Carefusion*, Petitioner seeks to excuse its failure to comply with the Rules by alleging that the specification does not include any corresponding structure beyond a general purpose computer. (Pet., 19.) Petitioner alleges that claims 15-28 are indefinite and seeks to sidestep the Rules by arguing that, “for the purposes of this Petition, Petitioner interprets the structure corresponding to all of the ‘means’ in claims 15-28 to include any computer configuration that would perform the claimed functions.” (*Id.*) However, the Board has made clear that petitioners cannot simply sidestep the Rules by alleging indefiniteness and inventing constructions that broadly encompass all computer implementations of the recited function.

Without the required construction for any of the means-plus-function features, the Petition lacks a fundamental prerequisite for its challenges to claims

15-28. Therefore, institution should be denied for Grounds 1 and 2 for at least claims 15-28.

III. The Petition is replete with fatal procedural errors.

The Petition contains numerous fatal deficiencies in both form and content. As explained below, these deficiencies render the Petition facially noncompliant with the statutory requirements and the Board's rules and demonstrate Petitioner's failure to meet its burden of proving unpatentability.

A. Petitioner improperly relies on unexplained claim charts without addressing distinct differences between the references and the claims. (All Grounds)

"[T]he petition [must] identif[y], in writing and with particularity, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim" § 312(a)(3). "The petition must specify where each element of the claim is found in the prior art patents or printed publications relied upon." 37 C.F.R § 42.104(b)(4).

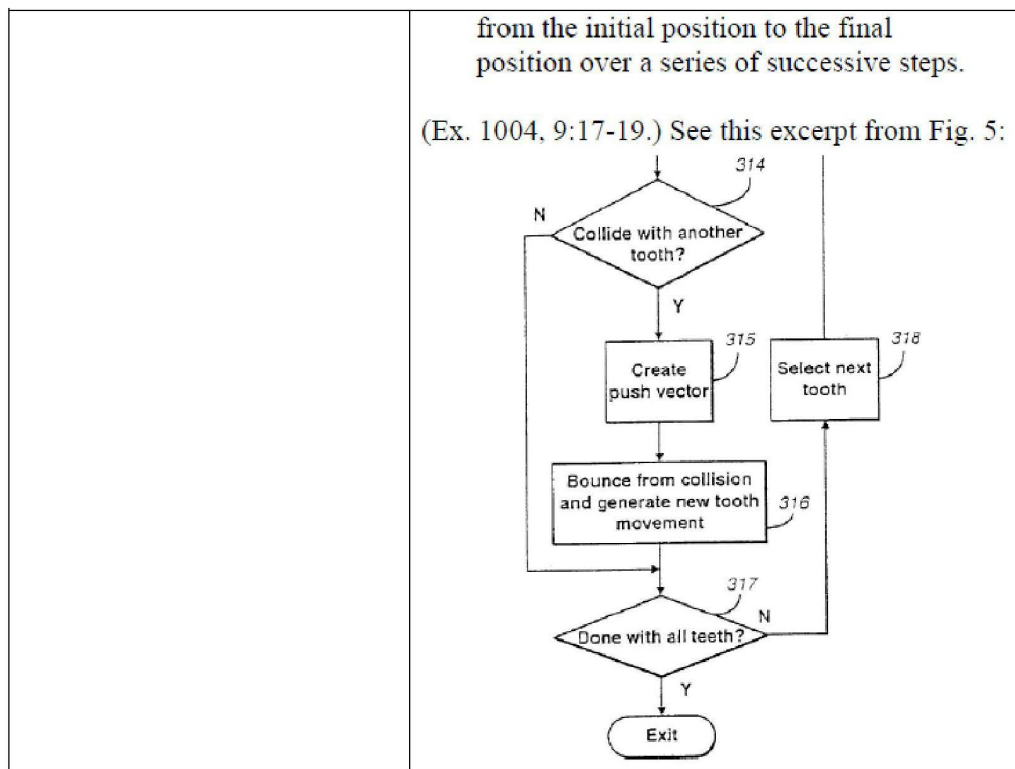
Contrary to these requirements, and despite repeated warnings from the Board regarding the insufficiency of unexplained claim charts, Petitioner merely performs a perfunctory mapping exercise lacking any meaningful explanation. This improperly shifts Petitioner's burden to the Board to sift through the Petition, the Declaration, and the applied references to determine whether each claim element is found or is absent in the references. A party requesting an *inter partes* review

should “avoid submitting a repository of all the information that a judge could possibly consider, and instead focus on concise, well organized, easy-to-follow arguments supported by readily identifiable evidence of record.” *Google Inc. v. EveryMD.com LLC*, IPR2014-00347, Paper 9, 19 (P.T.A.B. May 22, 2014) (denying institution) (quoting *Office Patent Trial Practice Guide*, 77 Fed. Reg. 48,756, 48,763 (Aug. 14, 2012)). A petitioner must therefore do more than supply various unexplained citations. *Printing Industries of America v. CTP Innovations, LLC*, IPR2013-00474, Paper 16, at 11 (P.T.A.B. Dec. 31, 2013) (denying institution where the petitioner did not explain how cited portions correspond to particular claim elements and the correspondence was not self-evident); *DeSilva v. DiLeonardi*, 181 F.3d 865, 866-67 (7th Cir. 1999) (“A brief must make all arguments accessible to the judges, rather than ask them to play archaeologist with the record.”).

Petitioner’s arguments for Ground 1 are emblematic of the insufficient analysis throughout the Petition. In support of Ground 1, Petitioner argues that Chishti’876 discloses the ’444 Patent claims by offering a brief summary of its arguments and by block quoting various portions from Chishti’876. (Pet., 20-44.) For example, for the recited “determining ... an order of movement” of independent claim 1, Petitioner rewrites the claim language, quotes two passages, and reproduces a figure from Chishti’876. (Pet., 25-26; reproduced below).

determining, by the host computer, an order of movement for each respective dental object such that the dental objects avoid colliding with or obstructing each other on their respective routes from said initial position to said desired final position	<p>Chishti '876 describes the host computer determining a treatment plan for each tooth that avoids collisions or obstructions on their respective routes from their initial position to their final position, using a collision detection algorithm:</p> <p>If any collisions are detected, the program alters the path of at least one tooth in each colliding pair by selecting a new position for one of the intermediate steps (step 1608) and creating a new spline curve (1602). The program then samples the new path (1604) and again applies the collision detection algorithm (1606). The program continues in this manner until no collisions are detected.</p> <p>(Ex. 1004, 13:38-45; <i>see also</i> 12:52-60 (detecting collisions or obstructions); Fig. 5.)</p> <p>Chishti '876 also explicitly teaches that the order of movement for each respective tooth is determined:</p> <p>[I]t is necessary to define or map the movement of selected individual teeth</p>
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Petition for *Inter Partes* Review of U.S. Patent No. 8,038,444



Petitioner offers no explanation on how the quoted passages and figure disclose the claimed “determining ... an order of movement.”

Similarly in Ground 2, Petitioner rewrites the claim language and quotes one passage from Chishti’511. (Pet., 49; reproduced below).

<p>determining, by the host computer, an order of movement for each respective dental object such that the dental objects avoid colliding with or obstructing each other on their respective routes from said initial position to said desired final position</p>	<p>Chishti '511 describes the host computer determining a treatment plan for each tooth that avoids collisions on their respective routes from their initial position to their final position:</p> <p>Having both a beginning position and a final position for each tooth, the process next defines a tooth path for the motion of each tooth. The tooth paths are optimized in the aggregate so that the teeth are moved in the quickest fashion with the least amount of round-tripping to bring the teeth from their initial positions to their desired final positions.... The tooth paths are segmented. The segments are calculated so that each tooth's motion within a segment stays within threshold limits of linear and rotational translation. In this way, the end points of each path segment can constitute a clinically viable repositioning, and the aggregate of segment end points constitute a clinically viable sequence of tooth positions, so that moving from one point to the next in the sequence does not result in a collision of teeth.</p> <p>(Ex. 1005, 4:7-22.)</p>
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Petitioner again offers no explanation of how the quoted passages and figure disclose the claimed “determining ... an order of movement.”

To the extent that Petitioner “assert[s] that the brief summary, and quotations, citations, and reproduced figures from [the reference] qualify as argument, they do not: (1) specify sufficiently where each element of [the claim] is found in [the reference], and (2) constitute a detailed explanation of the significance of the quotations, citations, and figures from [the reference].” *Google*,

IPR2014-00347, Paper 9, 19; *Gracenote Inc. v. Iceberg Industries*, IPR2013-00551, Paper 6, 30-32 (P.T.A.B. Feb. 28, 2014) (Denying Institution) (unexplained citations are insufficient support); *Cisco Systems v. C-Cation Tech.*, IPR2014-00454, Paper 12, 11, 13-14 (P.T.A.B. Aug. 29, 2014) (Denying Institution) (informative opinion) (holding that the petition provided deficient analysis and supplying an example claim chart demonstrating the deficient analysis).

Petitioner does nothing more than present a series of claim charts with little or no explanation of how the references allegedly disclose the claim elements. In effect, Petitioner has left the entirety of the analysis up to the Board and unduly hindered Patent Owner's ability to substantively respond. As a result, the Petition should be denied.

B. The Petition is supported only by attorney arguments which are insufficient to support Petitioner's conclusions of obviousness. (All Grounds – All Claims.)

Contrary to Petitioner's assertion that its Petition is supported by its Declaration (Pet., 5), much of the Petition is uncorroborated attorney arguments for at least three reasons. First, the Petition does not rely on its Declarant for several claims, which is insufficient to support its conclusions of obviousness as to these claims. Second, even when Petitioner does rely on its Declarant, Petitioner improperly circumvents the word count limit by incorporating by reference several

thousand words from its Declaration. And finally, even if the Declarant's statements could be properly assessed, these statements could support Petitioner's conclusions of obviousness with respect to any claim.

- 1. The Declarant limits his discussion to claims 6, 20, and 34 and specific claim terms, but fails to discuss claims 1-4, 7-19, or any reasons for obviousness of Grounds 1 and 2 – so a majority of the Petition is merely attorney arguments unsupported by the Declaration.**

The Federal Circuit affords little probative value to uncorroborated attorney arguments. *In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997); *In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984). The Board follows suit finding petitioners' assertions unpersuasive when the arguments consist of nothing more than mere attorney arguments. *Unified Patents Inc. v. Finnnavations LLC*, IPR2015-01209, Paper 13, 18 (P.T.A.B. Nov. 30, 2015) ("Petitioner's assertions of what [a POSA] would recognize . . . is nothing more than attorney argument unsupported by the relied upon evidence."); *ARM Ltd., Godo Kaisha IP Bridge I*, IPR2016-00825, Paper 9, 18 (P.T.A.B. Sept. 29, 2016); *Wasica Fin. GmbH v. Cont'l Auto. Sys., Inc.*, 853 F.3d 1272, 1286 (Fed. Cir. 2017) (affirming Board's holding that claim 6 is patentable because Petitioner relied only on attorney arguments and the reference was unclear as to whether it anticipated a particular claim feature.)

Here, the Declarant limits his discussion to just a few claims and claim terms. For example, the Declarant limited his discussion to claims 6, 20, and 34

and claim terms “staging the movement of a plurality of dental objects,” “staggering,” “round-tripping,” “all-equal pattern,” “V-shaped pattern,” “M-shaped pattern,” and “mid-line shift pattern.” (Ex. 1003 ¶¶ 70-75, 81-89). This leaves critical portions of Petitioner’s obviousness analysis entirely unsupported by expert testimony. For example, when Petitioner discusses combining distinct embodiments of Chishti’876, it merely states that a combination of multiple embodiments to meet the claimed “determining” step would have been obvious—but Petitioner does not cite to its Declarant because their expert does not supply any evidence. (Pet., 25-26.)

Similarly, when Petitioner discusses the combination of Chishti’511 and Chishti’876, they again do not cite to their Declarant for the combination because their Declarant does not supply any evidence supporting the proposed combination. (*E.g., id.*, 44-47, 50, 59.) For example and despite alleging that “slowing the movement of at least one dental object would implemented [*sic*] by a POSITA in Chishti ’511 in view of Chishti ’876” (*id.*, 59), Petitioner again fails to provide any evidentiary support from its Declarant. One may wonder why the Declarant did not supply analysis for the Petition. But regardless of the reasons, the Declarant’s scant or nonexistent analysis on most issues leaves the Petition devoid of critical evidence where key portions of the Petition rely on nothing more than attorney arguments.

The extensive reliance on attorney arguments is particularly problematic in view of the high level of skill alleged by Petitioner. Petitioner defines a POSA as having a “doctorate in dental science and three to five years of training and practical experience in orthodontics,”⁵ (Pet., 6), which is a relatively high skill level. Yet, knowing that the technology and combination requires analysis from a person at this skill level, the Petitioner fails to provide declaration support for their positions on many obviousness issues. This fails even the lowest threshold of *In re Geisler*, *De Blauwe*, *Unified Patents*, *ARM Ltd.*, *Godo Kaisha IP Bridge I*, and *Wasica*.

Thus, because Petitioner relies substantially on attorney arguments, which cannot support its conclusions of obviousness, institution should be denied for all grounds.

⁵ Patent Owner does not dispute Petitioner’s definition of the POSA standard at this time. However, in light of at least the claims of the ’444 Patent and the asserted references which require knowledge of data structures of computer algorithms (Pet., 33-34, citing to Ex. 1004, 11:32-43) and finite element analysis (*id.*, 54, citing to Ex. 1005, 6:38-55), Petitioner’s POSA definition appears highly suspect.

2. Even when Petitioner does rely on its Declarant, Petitioner improperly circumvents the word count limit by incorporating by reference several thousand words from its Declaration.

The rules explicitly prohibit incorporation by reference, *i.e.*, incorporation of information from one document into another document. 37 C.F.R. § 42.6(a)(3); *DeSilva*, 181 F.3d at 866–67 (Incorporation “by reference amounts to a self-help increase in the length of the [] brief[,]” and “is a pointless imposition on the court’s time. A brief must make all arguments accessible to the judges, rather than ask them to play archaeologist with the record.”). And in instances when a petitioner has incorporated information by reference without sufficient explanation in the petition, the Board has declined to consider such information because the information incorporated by reference allows the petitioner to circumvent the word count limits. *Nexxon Ltd. v. OneD Material LLC*, IPR2017-00851, Paper 7, 10-11 (P.T.A.B. Aug. 25, 2017) (citing *Cisco Sys., Inc. v. C-Cation Techs., LLC*, IPR2014-00454, Paper 12, 7-10 (P.T.A.B. Aug. 29, 2014) (informative)).

Here, the Petition repeatedly follows a simple, conclusory sentence with citation to numerous paragraphs (*i.e.*, numerous pages) of the declaration. For the Board’s convenience, Patent Owner provides a chart demonstrating the number of Declaration words cited after simple, conclusory Petition statements on claim construction of the terms “staggering” and “round-tripping” and arguments made in Ground 1:

Petition Page Number	Conclusory Statement (Claim Construction and Ground 1)	Approximate Word Count
17	Accordingly, a POSITA would understand staggering to refer to delaying one or more teeth from moving one or more stages where it would otherwise move in order to prevent another tooth from colliding with and/or obstructing the path of the delayed tooth. (Ex. 1003 ¶¶ 72-73.)	368
17	Even with this particular definition, round-tripping is a well-known technique that may be necessary in an orthodontic treatment. (Ex. 1003 ¶¶ 81-85.)	498
17	Accordingly, a POSITA would understand round-tripping to refer to moving a first tooth out of the path of a second tooth, and once the second tooth has moved sufficiently, moving the first tooth back to its previous position before proceeding to a desired final position of that first tooth. (Id., ¶¶ 74-75.)	120
26-27	As would be understood by a POSITA, this is equivalent to staggering as discussed above, meaning determining movement patterns so that movement of particular teeth does not occur at the same time, and as explained in the '444 patent. (Ex. 1003 ¶¶ 72-73.)	368
31	Further, it was well-known in the art to that optimizing the number of stages was a key aspect of determining a treatment plan. (Ex. 1003, ¶¶ 104-105.)	296
31	When determining the optimal number of stages, the method of Chishti '876 necessarily determines the total distance each tooth will move to achieve respective final position. (Ex. 1003 ¶¶ 90-93.)	379
33	To a POSITA, this clearly teaches dividing the total distance to determine a number of movement stages for each tooth. (Ex. 1003 ¶¶ 94-97.)	377

Petition Page Number	Conclusory Statement (Claim Construction and Ground 1)	Approximate Word Count
33	As is well-known to a POSITA, a treatment plan can include both movement and non-movement stages, and by generating the plan, a number (i.e., zero or more) non-movement stages are necessarily determined for use in the plan. (Ex.1003 ¶¶ 98-100.)	229
34	A POSITA would have used such an array to add the number of movement and nonmovement stages, determining a minimum number of stages for each tooth. (Ex. 1003 ¶¶ 102-104.)	288
34	[T]hus necessarily teaches selecting the largest of the minimum number of stages, as this is the minimum amount of movement possible for all teeth to reach their final goal. (Ex. 1003 ¶¶ 104-105.)	296
35	[I]t would have been an obvious variation for a POSITA to select the largest of the minimum number of stages, because it is common sense for a practitioner that it is necessary to accommodate all teeth, and most desirable to accomplish the movement in the fewest number of stages possible. (Ex. 1003 ¶105.)	152
	<u>Total Additional Words:</u>	<u>3000+</u>

None of these conclusory statements provide the required explanation in the Petition as to how and why the Petitioner reached its respective conclusions. Instead, as recognized by the Board in *C-Cation Techs., LLC*, such “practice of citing the Declaration to support conclusory statements that are not otherwise

supported in the Petition [] amounts to incorporation by reference.” *C–Cation Techs., LLC*. IPR2014-00454, Paper 12, 7-10.

Thus, with respect to Petitioner’s claim construction and assertions made in Ground 1, the Petition attempts to incorporate by reference over **3000** words from its Declaration. Similarly, with respect to Ground 2, Petitioner incorporates by reference an **additional several thousand words** from its Declaration into its Petition. (Pet., 50, 54-58.)

These incorporations are of particular significance as the Petitioner certifies that its Petition is only 110 words short of the word count limit of 14,000 words, but cites to well over 4,000 to 5,000 words of statements only found in its Declaration. Thus, with respect to almost every conclusory statement in the Petition that cites to the Declaration, the Petition incorporates statements that exceed the prescribed word count limit.

Therefore, because the Declarant’s statements that are incorporated by reference allows the Petitioner to circumvent the word count limits imposed on petitions for IPRs, this Board, like the Board in *Nexxon* and *C–Cation Techs., LLC*, should also decline to consider such statements. Without the relied-upon the Declarant’s statements, the Petition’s already paper thin evidentiary support becomes virtually nonexistent.

3. Even if the Declarant's statements could be properly considered, these statements cannot support Petitioner's conclusions of obviousness with respect to any claim.

While the Declarant asserts that he compared “the claims ’444 patent to the known prior art,” (Ex. 1003 ¶ 68), the Declarant does not make his obviousness analysis explicit with respect to any claim. For example, while the Declaration includes an obviousness analysis for features recited in claim 6, the Declaration fails to include any analysis with respect to any features of independent claim 1 or intermediate dependent claim 5, from which claim 6 depends. In fact, the Declaration fails to even acknowledge that claim 6 depends from claim 5, which further depends from claim 1. Instead of providing a proper analysis of the claims 1, 5, and 6 when discussing claim 6, the Declarant improperly reduces them to a “gist” by intentionally omitting specific claim features, (*compare* Ex. 1001 claim 1 *with* Ex. 1003 ¶¶ 66), and summarily concludes that all “these elements were well-known in the art, and even disclosed in detail in Patent Owner Align’s own prior art patents.” (Ex. 1003 ¶ 67.) It strains belief that Petitioner’s Declarant can come to any conclusions of obviousness with respect to claim 6 when he offers no analysis for the claims from which it depends, claims 1 and 5.

Moreover, even this limited testimony should not be given probative weight in view of the Declarant’s status as an interested party. Self-interested testimony must be treated with skepticism. *Allergan, Inc. v. Apotex Inc.*, 754 F.3d 952, 968

(Fed. Cir. 2014); *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456, 1465 (Fed. Cir. 1998) (“a witness’s pecuniary interest in the outcome of a case goes to the probative weight of testimony”).

Patent Owner, Align, is a competitor of Petitioner, and as an admitted officer of ClearCorrect, Round Rock, Texas, (Ex. 1003 ¶ 7) the Declarant has an interest in protecting ClearCorrect’s aligner operations and thus has an interest in the outcome of this proceeding. Indeed, the Board has previously found the Declarant to be an interested party in the context of an IPR initiated by ClearCorrect against Patent Owner. (*ClearCorrect Operating, LLC v. Align Technology, Inc.*, IPR2016-00270, Paper 43, 24 n.9).

Accordingly, for at least these reasons discussed above, the Declaration cannot support Petitioner’s conclusions of obviousness for any claim, and this Board should deny institution for at least these additional reasons.

C. The Petition fails *Graham* and *KSR* because it lacks claim construction for MPF claims 15-28. (All Grounds)

The courts have made construing claims before ascertaining the differences between the references and the claims at issue (second *Graham* factor) a requirement for obviousness analysis. *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (reaffirming *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966)). Indeed, as recognized by the Federal Circuit, both anticipation and obviousness are two-step inquiries] **first step** in both analyses is a proper

construction of the claims, and the **second step** in the analyses requires a comparison of the properly construed claim to the prior art. *TI Grp. Auto. Sys. (N. Am.), Inc. v. VDO N. Am., L.L.C.*, 375 F.3d 1126, 1139 (Fed. Cir. 2004); *Key Pharm. v. Hercon Labs. Corp.*, 161 F.3d 709, 714 (Fed. Cir. 1998) (same). “[W]ith respect to claims subject to construction under § 112 ¶ 6[, an unpatentability determination] requires structural analysis demonstrating that the corresponding structure in the challenged patent specification—or an equivalent structure—is present in the prior art.” *Kingston Technology Company, Inc. v. SPEX Technologies, Inc.*, IPR2017-00824, Paper 8, 18 (P.T.A.B. Aug. 17, 2017) (Denying Institution).

Here, Petitioner fails to meet its burden under the established legal precedent for at least three reasons. First, as noted in Section II.C for claims 15-28, the Petition fails to show how challenged claims are to be construed. Without this initial step, one cannot move on to discuss how to compare applied references with respect to the properly construed claims. *TI Grp. Auto.*, 375 F.3d at 1139.

Second, even ignoring the failure to construe the MPF claims, Petitioner also fails to explain the differences between Chishti’876/Chishti’511 and the MPF features before providing their modification or combination analysis. Petitioner’s failure is fatal to meeting its burden as the Board has recognized that a failure to perform the second *Graham* factor analysis, even in a single reference obviousness

ground, is a reason to deny institution. *Universal Remote Control v. Universal Electronics, Inc.*, IPR2014-01082, Paper 9, at 8-10 (P.T.A.B. Dec. 18, 2014); *Moses Lake Indus., Inc. v. Enthone, Inc.*, IPR2014-00243, Paper 6, 18 (P.T.A.B. June 18, 2014); *Shopkick Inc. v. Novitaz, Inc.*, IPR2015-00279, Paper 7, 27-28 (P.T.A.B. May 29, 2015) (citations omitted).

Third, Petitioner further fails to perform the required structural comparison of Chishti'876/Chishti'511 with structures disclosed in the '444 patent associated with the claimed functions. *Kingston*, IPR2017-00824, Paper 8, 19. Instead, Petitioner makes the same mistakes as those made in *Kingston* by merely stating that Chishti'876/Chishti'511 allegedly teaches a computer performing the steps and referring to the discussion of claim 1-14, (Pet., 37-40 and 59-63). Petitioner's failure to perform the required comparisons is fatal as recognized by *Kingston*.

Therefore, institution should be denied for Grounds 1 and 2 with respect to at least claims 15-28 for at least these additional reasons.

D. The Petition is dead silent regarding how Chishti'876 and Chishti'511 meet the “determin[ation], by the host computer, an order of movement for each respective dental object.” (All Grounds)

Independent claims 1, 15, and 29 recite (using their respective language) “determining, by the host computer, an order of movement for each respective dental object” (hereinafter “Movement Order”). Petitioner is required under § 312(a)(3), the rules, and legal precedent to explain how the applied references

allegedly teach or suggest the claimed features. (Section III.A.) But Petitioner never addresses how either Chishti'876 or Chishti'511 allegedly teach this feature. To the extent Petitioner seeks to combine different embodiments of Chishti'876, Petitioner also fails to explain how and why a combination of these embodiments would allegedly render obvious this feature. *ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1328-29 (Fed. Cir. 2012) (citing *KSR*).

1. Petitioner fails to explain how and why collision detection and mapping the movement of selected individual teeth of Chishti'876 render obvious Movement Order. (Ground 1)

Petitioner fails to show how and why Chishti'876 allegedly discloses the Movement Order of the independent claims. Instead, Petitioner first alleges that “Chishti'876 describes the host computer **determining a treatment plan** for each tooth that avoids collisions or obstructions on their respective routes from their initial position to their final position, using a collision detection algorithm.” (Pet., 25.) Yet, despite relying on a complete different language in Chishti'876 compared to the claims, Petitioner fails to explain how “determining a treatment plan” (as it contends that cited and quoted portions of Chishti'876 discloses) allegedly renders obvious “determining . . . **an order of movement** for each respective dental object,” as recited in the claims.

Petitioner also fails to explain how the cited and quoted portions of Chishti'876 allegedly teach Movement Order. In other words, the Petition fails to

explain how cited portions of Chishti'876 discloses collision detection (Pet., 25, citing Ex. 1004, 13:38-45, 12:52-60 and excerpt of FIG. 5) and discloses that “[i]t is necessary to define or map the movement of selected individual teeth from their initial position to the final position over a series of successive steps” (Pet., 25-26, citing Ex. 1004, 9:17-19) render obvious “determining . . . **an order of movement** for each respective dental object,” as recited in the claims.⁶

⁶ To the extent Petitioner argues that it also relied on other portions of Chishti'876 to allegedly render obvious Movement Order, Petitioner has failed to provide the required notice regarding these other portions to the Board and Patent Owner. *In re NuVasive, Inc.*, 841 F.3d 966, 972 (Fed. Cir. 2016) (holding that Petitioner failed to give notice to the Patent Owner by failing to cite a particular portion of the applied reference for which the Board cannot rely upon in its final written decision). Absent such notice, “the Board is [not] free to adopt arguments on behalf of the petitioners that could have been, but were not, raised by the petitioner.” *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016). “Instead, the Board must base its decision on arguments that were advanced by a party, and to which the opposing party was given a chance to respond.” *Id.*; *Biotec Biologische Naturverpackungen GmbH & Co. KG v. Biocorp, Inc.*, 249

Furthermore, to the extent Petitioner relies on a combination of Chishti'876's collision detection and defining or mapping the movement of selected individual teeth, Petitioner also fails to explain *how and why* a POSA would have combined these distinct embodiments of Chishti'876 to allegedly render obvious Movement Order.⁷ *ActiveVideo Networks, Inc.*, 694 F.3d at 1328-29.

Finally, even ignoring the failed *KSR* analysis, Petitioner offers no explanation as to how the Chishti'876's disclosure of *where* a tooth moves or should move in various contexts allegedly renders obvious the claimed "an *order* of movement." (Pet., 25-26.)

Petitioner bears the burden of demonstrating that Movement Order would have been obvious from its modification of Chishti'876. Given Petitioner's total lack of explanation of *how and why* it would modify collision detection and tooth

F.3d 1341, 1353 (Fed. Cir. 2001) ("It is not the trial judge's burden to search through lengthy technologic documents for possible evidence.")

⁷ Thus, Petitioner's "abundance of caution" rationale for asserting a single reference obviousness Ground 1 (rather than an anticipation ground) (Pet., 20 n. 4) cannot excuse its failure to explain how and why a POSA would have understood that this feature is obvious.

path calculation to teach Movement Order, the Petitioner falls far short of meeting this burden. Because Petitioner fails its burden, Ground 1 should be denied.

2. Petition fails to explain how tooth path segmentation of Chishti'511 renders obvious Movement Order. (Ground 2)

Petitioner fails to show how Chishti'511 allegedly discloses Movement Order of the independent claims. Instead, Petitioner, discussing this feature in Ground 2, first alleges that “Chishti'511 describes the host computer **determining a treatment plan** for each tooth that avoids collisions on their respective routes from their initial position to their final position.” (Pet., 49.) But Petitioner fails to explain how “determining a treatment plan” (as it contends that Chishti'511 discloses) renders obvious “determining . . . an order of movement” as recited in the claims.

Petitioner also fails to explain how the cited and quoted portion of Chishti'511 renders obvious Movement Order of the independent claims. For example, the cited and quoted portion of Chishti'511 discloses “[h]aving both a beginning position and a final position for each tooth, the process next defines a tooth path for the motion of each tooth.” (Ex. 1005, 4:7-9.) And the cited and quoted portion of Chishti'511 further discloses that the tooth paths are optimized in the aggregate and segmented. (*Id.*, 4:9-15.). Yet, given these differences, Petitioner never explains how defining a tooth path and tooth path segmentation of Chishti'511 renders obvious Movement Order. In other words, Petitioner fails to

explain how defining a tooth path and tooth path segmentation of Chishti'511 renders obvious "determining . . . an order of movement," as recited in the independent claims.⁸

Therefore, Petitioner fails its burden of identifying how Movement Order is met by the language relied upon in Chishti'511. Accordingly, Ground 2 should be denied.

E. Petitioner offers no explanation of how Chishti'876 and Chishti'511 meet "receive an electronic representation of each dental object in relation to one another in an initial position," a feature recited in independent claim 29 but not claim 1. (All Grounds – Claims 29-42)

Petitioner provides no notice to the Patent Owner or the Board of how Petitioner maps the references to claim 29's features required by § 312(a)(3) and 37 C.F.R. § 42.22(a)(2). Petitioner's failure is fatal to its burden in proving unpatentability of at least claims 29-42.

⁸ To the extent Petitioner argues that it also relied on other portions of Chishti'511 or Chishti'876 to allegedly render obvious Movement Order, Petitioner has failed to provide the required notice regarding these other portions to the Patent Owner. *NuVasive*, 841 F.3d at 972. Nor is "the Board is free to adopt arguments on behalf of petitioners that could have been, but were not, raised by the petitioner." *In re Magnum Oil Tools*, 829 F.3d at 1381.

“A full statement of the reasons for the relief requested, including a detailed explanation of the significance of the evidence including material facts, and the governing law, rules, and precedent.” 37 C.F.R. § 42.22(a)(2). Yet knowing this requirement, Petitioner fails to provide any explanation as to how the references allegedly render obvious “receive an electronic representation of each dental object in relation to one another **in an initial position**,” as recited in claim 29.

Claims 1 and 29 are distinctly different in at least one respect: while claim 29 recites “receive an electronic representation of each dental object in relation to one another **in an initial position**,” claim 1 recites “receiv[e] ... an electronic representation of each dental object ... in relation to one another.” Despite this stark difference and perhaps as another attempt to circumvent the word count limit (Section III.B.2), the Petition merely states “*See discussion above for claim 1.*”⁹ (Pet., 40, 63.) Here, Petitioner both fails to provide any explanation on how the references allegedly teach or suggest the additional features of claim 29 and why Petitioner does not address the additional features of claim 29. Petitioner was well aware that the “Board must base its decision on arguments that were advanced by a

⁹ The petition is certified to contain 13,890 words out of a maximum of 14,000 words. 37 CFR § 42.24 (a)(1)(i).

party, and to which the opposing party was given a chance to respond.” *In re Magnum Oil Tools*, 829 F.3d at 1381 (Fed. Cir. 2016). Since there is no notice for this feature of claim 29, institution should be denied for at least claims 29-42.

F. Petitioner’s conclusory inherency argument cannot meet the high standard for inherency to render obvious “determining a total distance each respective dental object will move” (All Grounds – Dependent Claims 6, 20, and 34)

Dependent claims 6, 20, and 34 recite, in part, “determining **a total distance each** respective dental object will move” (hereinafter “Total Distance”). To allegedly render obvious Total Distance, Petitioner alleges that “the method of [Chishti’876/Chishti’511] **necessarily determines the total distance each** tooth will move to achieve respective final position” and cites to its Declarant for support. (Pet., 31-32, 54, citing Ex. 1003 ¶¶ 90-93).

For this feature, and with respect to Chishti’876, Petitioner states that “FIG. 2B illustrates a single tooth from FIG. 2A and defines how tooth movement distances are determined,” (*Id.*, citing Ex. 1004, 5:35-36) and Petitioner further relies on:

[I]f only a final position is defined for a particular component, each subsequent stage after the initial stage will simply show the component an equal linear distance and rotation (specified by a

quatemion [*sic*]¹⁰) closer to the final position. (Pet., 32, citing Ex. 1004, 12:12-21.)

The path-generating program, whether using linear or non-linear interpolation, selects the treatment positions so that the tooth's treatment path has approximately equal lengths between each adjacent pair of treatment steps. (*Id.*, citing Ex. 1004, 13:49-52.)

From the above, Petitioner then concludes, without any explanation, that Chishti'876 “**necessarily** requires calculating a total distance of movement.” (Pet., 32.)

Similarly and with respect to Chishti'511, Petitioner first states that “the program segments the tooth path so that each segment stays within threshold limits of motion.” (Pet., 54.) Based on a quote of Chishti'511, Petitioner then concludes that “this calculation **requires** determining the aggregate distance each tooth will move to reach the final position:”

The tooth paths are segmented. The segments are calculated so that each tooth's motion within a segment stays within threshold limits of

¹⁰ While the Specification recites “quatemion,” in light of the surrounding context, the Specification appears to be referring to “quaternion” which is a coordinate system typically used to calculate **rotational** translations. (Ex. 1004, 12:12-21.)

linear and rotational translation. In this way, the end points of each path segment can constitute a clinically viable repositioning, and the aggregate of segment end points constitute a clinically viable sequence of tooth positions, so that moving from one point to the next in the sequence does not result in a collision of teeth. (*Id.*, citing Ex. 1005, 4:15-22.)

Petitioner's arguments thus rely on an alleged inherent disclosure ("necessarily requires") of Chishti'876 or Chishti'511 to allegedly render obvious Total Distance. Inherency is implied for two more reasons: Petitioner does not allege that a POSA would have understood that Chishti'876 or Chishti'511 allegedly teaches this feature, nor does the Petitioner allege that a POSA would have modified Chishti'876 or Chishti'511 to allegedly teach this feature. Rather, Petitioner alleges that "the method of [Chishti'876/Chishti'511] **necessarily** determines the total distance each tooth will move to achieve respective final position." (Pet., 54.) Reliance on inherency is also consistent with arguments made by Petitioner's Declarant. (Ex. 1003 ¶ 91, "[A POSA] would understand that **claim 6 does not describe any technique that is not inherently performed** by [the applied references].")

Petitioner's inherency argument fails for several reasons. First, the Petition fails to provide evidence for its attorney argument that Total Distance ***necessarily flows*** from these portions of Chishti'876. Second, Petitioner merely incorporates by reference its Declarant, without elaboration or analysis, into the Petition

knowing that incorporation by reference is expressly prohibited since it circumvents the word count limit (Section III.B.2). Finally, the declarant merely provides conclusory statements uncorroborated by record evidence. Each of these defects is fatal on its own.

1. Petitioner fails to provide evidence that Total Distance necessarily flows from block quotes of Chishti’876 or Chishti’511.

In the context of obviousness, the Federal Circuit has made clear that “[a] party must [also] meet a high standard in order to rely on inherency to establish the existence of a claim limitation in the prior art in an obviousness analysis.” *PAR Pharm., Inc. v. TWi Pharm., Inc.*, 773 F.3d 1186, 1195-96 (Fed. Cir. 2014). Thus, to establish inherency in an obvious analysis, “the [feature] at issue **necessarily must** be present, or the natural result of the combination of elements explicitly disclosed by the [reference].” *Id.* And, while a gap may be filled with recourse to extrinsic evidence, “[s]uch evidence **must make clear** that the missing [feature] is necessarily present in the thing described in the reference, and that it would be so recognized by [a POSA].” *Cont’l Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991) (internal citations omitted); *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999) (same).

Nowhere does the Petition actually make clear as to how and why Total Distance would necessarily flow from a combination of Chishti’876’s separate

embodiments that discuss: (1) defining magnitude of any tooth movement, in terms of a maximum linear translation of a point on a tooth, in any treatment step (Ex. 1004, 6:50-67); (2) showing equal linear distances of “a particular component” at subsequent stages after an initial stage (*Id.* 12:12-22); and (3) selecting intermediate treatment positions so that tooth’s treatment path has approximately equal lengths between adjacent pairs of treatment steps (*Id.*, 13:27-30; 13:49-52). Nor does the Petition make clear how and why Total Distance would necessarily flow from the cited portion of Chishti’511. (Pet., 54, citing Ex. 1005, 4:15-22.)

Merely quoting embodiment(s) of Chishti’876 or Chishti’511 without explanation of how and why a POSA would have recognized that Total Distance **necessarily must** be present, or the natural result of the combination of embodiments of Chishti’876 or an embodiment of Chishti’511, does not satisfy the high standard set forth for inherency by the Federal Circuit.

Accordingly, because the Petition fails to meet the high standard of inherency to render obvious Total Distance, institution should be denied with respect to at least claims 6, 20, and 34.

2. Petitioner improperly circumvents the word count limit by incorporating by reference Declaration inherency arguments.

The Rules and legal precedent explicitly prohibit incorporation by reference. (Section III.B.2.) Here, rather than providing an articulated argument in the

Petition, Petitioner cites to many paragraphs and pages only found in the Declaration. For example, Petitioner merely states that “the method of [Chishti’876/Chishti’511] **necessarily** determines the total distance each tooth will move to achieve respective final position” and then cites to approximately 379 words of its Declaration. (Pet., 31-32, 54, citing Ex. 1003 ¶¶ 90-93 (pages 54 to 56).) Because the Petition’s conclusory statement does not provide any explanation of how and why Total Distance necessarily flows from the cited portion(s) of Chishti’876 or Chishti’511, this Board, like the Board in *Nexxon* and *C-Cation Techs., LLC*, should also decline to consider such information. Without the Declaration arguments, the Petition has no evidence to support its inherency argument and institution should be denied with respect to claims 6, 20, and 34 for at least this additional reason.

3. Even if the Declaration could be considered, the Declarant’s statements are uncorroborated conclusions.

As an initial matter, the rules explicitly recite that “[e]xpert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.” 37 C.F.R. § 42.65(a); *Office Patent Trial Practice Guide*, 77 Fed. Reg. 48,756, 48,763 (Aug. 14, 2012) (a declaration expressing an opinion of an expert without disclosing underlying facts may be given no weight). The Board has routinely given no weight to expert testimony that does not disclose any evidence to support their opinions. *Sony Corp, v. Fujifilm Corp*, IPR2017-

00625, Paper 8, 15-16, 23 (P.T.A.B. Jul. 10, 2017); *Amazon.com, Inc. v. Avago Technologies General IP (Singapore) Pte. Ltd.*, IPR2017-00963, Paper 14, 23 (P.T.A.B. Sept. 13, 2017).

Here, while the Declarant provides several statements regarding the alleged importance of knowing the “total distance” in orthodontic treatments, the Declarant provides no citations to any underlying facts that support his conclusions. (Ex. 1003, ¶¶ 91-93.) The Declarant’s failure to cite any underlying facts is particularly suspect here as the Declarant cites to over thirty exhibits in the field of dentistry and orthodontics and purports to have authored an extensive number of publications on orthodontic treatment (Ex. 1003, ¶¶ 16, 12-15, citing to pp. 112-115 (listing Ex. 1006 through Ex. 1041)), yet fails to provide a single underlying fact to corroborate his conclusion. Thus, this Board, like the Board in *Sony Corp* and *Amazon.com, Inc.* should also give no weight to the Declarant’s uncorroborated statements, particularly in view of the Declarant’s status as an interested party. (Section III.B.3.)

But even considering such statements on their merits, the Declarant does not provide any explanation as to why knowing “when, which direction, and how far each tooth is **moving in each step**” (Ex. 1003, ¶ 92) necessarily involves the claimed “determining **a total distance** each respective dental object will move.” It is also unclear how the Declarant’s uncorroborated statements about orthodontic

treatments in general would lead a POSA to understand that Total Distance would necessarily flow from specific cited portions of Chishti’876 or Chishti’511. (*Id.*) Instead, the Declarant merely characterizes the specific citations to Chishti’876 or Chishti’511 and states that “these calculations necessarily involve the total distances moved of each tooth.” (*Id.*, ¶ 93.)

Absent record evidence, the Declarant’s theories fall under pure speculation, which cannot serve as substitute for factual support and is an insufficient basis for inherency. *Bettcher Indus., Inc. v. Bunzl USA, Inc.*, 661 F.3d 629, 639-40 (Fed. Cir. 2011) (internal citations omitted); *PAR Pharm., Inc.*, 773 F.3d at 1195 (“Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.”) (internal citations omitted).

Accordingly, because the Declarant’s uncorroborated, conclusory statements are pure speculation insufficient to support Petitioner’s inherency argument, institution should be denied with respect to claims 6, 20, and 34.

G. Petitioner admits that Ground 1 should be denied under the proper construction of Staggering and Round-Tripping. (Ground 1 – Claim 1)

Petitioner asserts that Chishti’876 allegedly teaches Staggering and Round-Tripping in Ground 1, because Chishti’876 allegedly discloses only **one alternative** (*i.e.*, “staggering”) within the supposed *Markush* group. (Pet., 26-27.)

Petitioner never alleges that Chishti'876 teaches “round-tripping” in Ground 1. (*Id.*)

The proper construction of Staggering and Round-Tripping, however, requires the assessment of **both** “staggering and round-tripping” to avoid colliding with or obstructing between dental objects. (Section II.A.) Thus, Ground 1 should be denied because the Petition fails to even allege that the asserted reference teaches all features of the claims as properly construed.

To the extent that the Petition includes statements in Ground 2 that Chishti'876 also allegedly teaches “round-tripping” not included in the claim chart for Ground 1, such statements fail the particularity requirements as recognized by Federal Circuit precedent. Indeed, as recognized by the Federal Circuit, “it is of the **utmost importance** that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify ‘**with particularity**’ the ‘evidence that supports the grounds for the challenge to each claim.’” *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (internal citations omitted). As further recognized by the Federal Circuit, when Petitioner relies on claim charts to target specific claim features with precision like the Petitioner has done here, generalized statements cannot be relied upon to provide adequate notice with respect to all portions of an applied reference. *EmeraChem Holdings, LLC v. Volkswagen Grp. of Am., Inc.*, 859 F.3d 1341, 1349 (Fed. Cir. 2017). Regardless,

as explained in the following section, the statements in Ground 2 regarding Chishti'876's discussion of round-tripping are blatantly misleading.

Accordingly, under the proper construction of Staggering and Round-Tripping, the Board should deny institution of Ground 1.

H. Petitioner fails to explain why a POSA would have disregarded Chishti'876's statements discouraging round-tripping, instead resorting to improper hindsight. (Ground 2 – All Claims)

Staggering and Round Tripping requires assessment of both “staggering” and “round-tripping.” (Section II.A.) Petitioner argues that Chishti'511 “describes treatment plans including round-tripping.” (Pet., 49.) Petitioner further argues that “it would have been obvious to a POSITA that a treatment plan could involve staggering, based on Chishti '876.” (*Id.*, 50.) Therefore, Petitioner concludes, the combination of Chishti'511 and Chishti'876 discloses “determining an order of movement, for the benefit of avoiding collisions or obstructions, through at least one of staggering and round-tripping.” *Id.*

Petitioner's alleged combination of Chishti'511 and Chishti'876 is based on impermissible hindsight, because the Petitioner ignores disparate teachings of Chishti'511 and Chishti'876 and fails to explain why a POSA would have resolved this disparity.

As recognized by the courts, “[a] patent composed of several elements is not proved obvious by merely demonstrating that each of its elements was,

independently, known in the prior art.” *ActiveVideo Networks, Inc.*, 694 F.3d at 1327 (citing *KSR*). The courts have repeatedly held that “[i]t is impermissible... to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.” *In re Wesslau*, 353 F.2d 238, 241 (C.C.P.A. 1965). The Board has concurred. *LG Display Co. v. Innovates Display Techs. LLC*, IPR2014-01362 Paper 12, 17 (P.T.A.B. Mar. 2, 2015) (“When evaluating claims for obviousness, ‘the prior art as a whole must be considered’”) (quoting *In re Hedges*, 783 F.2d 1038, 1041 (Fed. Cir. 1986)).

Had Petitioner assessed Chishti’876 in its entirety, Petitioner would have realized that Chishti’876 states that “[t]he path scheduling algorithm determines the treatment path while **avoiding** ‘round-tripping,’ *i.e.*, while avoiding moving a tooth along a distance greater than absolutely necessary to straighten the teeth.” (Ex. 1004, 14:46-50.) Chishti’876 states that “[s]uch motion is **highly undesirable**, and has potential negative effects on the patient.” (*Id.*, 14:50-51.) In fact, Petitioner misleadingly cites the above passages as showing that the treatment plans in Chishti’876 *do* incorporate round-tripping. (Pet., 21, 36.)

Petitioner’s failure to consider Chishti’876’s statements is strong evidence that Petitioner’s analysis and conclusion were a result of hindsight reconstruction. Indeed, by picking and choosing only portions of Chishti’511 and Chishti’876 that

supports Petitioner's position, while disregarding other teachings without any explanation, Petitioner has engaged in exactly the type of hindsight reconstruction the courts have cautioned against. *Grain Processing Corp. v. Am. Maize-Products Co.*, 840 F.2d 902, 907 (Fed. Cir. 1988) ("Care must be taken to avoid hindsight reconstruction by using 'the patent in suit as a guide through the maze of prior art references, combining the right references in the right way so as to achieve the result of the claims in suit.'") (quoting and paraphrasing *Orthopedic Equip. Co. v. United States*, 702 F.2d 1005, 1012 (Fed. Cir. 1983)); *In re NTP, Inc.*, 654 F.3d 1279, 1299 (Fed. Cir. 2011) ("This type of piecemeal analysis is precisely the kind of hindsight that the Board must not engage in."); *Oracle Corp. et al. v. Crossroads Systems, Inc.*, IPR2014-01197, Paper 77, 15 (P.T.A.B. Jan. 28, 2016).

While Petitioner provides some generic, conclusory rationales why a POSA allegedly would have combined Chishti'876 and Chishti'511 (*see* Pet., 47), none of these boilerplate rationales explain why a POSA would have ignored Chishti'876's explicit statements about avoiding round-tripping. Petitioner's citation to Declaration paragraphs 72-73 and 86-89 in support of the proposed combination does nothing to mitigate Petitioner's selective and misleading use of the references, as none of these paragraphs even mention round-tripping. (Pet., 46, 50) Paragraphs 72-73 discuss only staggering, and paragraphs 86-89 discuss predetermined movement patterns, again without mentioning round-tripping. Petitioner thus fails

to offer any explanation of why a POSA, having considered Chishti'876's explicit statements discouraging round-tripping, nevertheless would have found it obvious to assess both staggering *and* round-tripping as required by the claims.

By failing to explain its selective use of certain teachings while ignoring other highly relevant teachings regarding round-tripping, Petitioner arrives at its proposed combination of Chishti'511 and Chishti'876 by using the claimed invention as a "blueprint," which necessarily constitutes impermissible hindsight. *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138 (Fed. Cir. 1985).

Petitioner's reliance on paragraphs 72-73 and 86-89 of the Declaration fails to cure the impermissible hindsight used to combine Chishti'876's alleged staggering with Chishti'511's alleged round-tripping. (Pet., 46, 50.)

For example, paragraph 72 discusses how staggering is allegedly defined in the '444 Patent. (Ex. 1003 ¶ 72.) Paragraph 73 alleges that staggering is a well-known technique and ends with stating the "POSITA would easily understand staggering to refer to delaying one or more teeth from moving one or more stages where it would otherwise move in order to prevent another tooth from colliding with and/or obstructing the path of the delayed tooth." (Ex. 1003 ¶ 73.)

These paragraphs of the Declaration do not provide any explanation as to how a POSA would have combined the selected portions of Chishti'511 and Chishti'876 without using the claimed invention as a "blueprint." These paragraphs

also do not provide an explanation as how and why a POSA would be able to resolve Chishti'876's explicit disclosure that "round-tripping" is highly undesirable. Also, Petitioner relies on paragraphs 86-89 of their expert's declaration and states:

A POSITA would have been motivated to generate treatment segments as taught by Chishti '511 and to use a staggering option or the other particular treatment paths as necessary as taught by Chishti '876 because these treatment options may be useful and even necessary in some treatment plans, depending on each individual patient's set of teeth. (Pet., 46.)

Paragraph 86 discusses that "it would be understood that the types and patterns of tooth movement are related to the patient's treatment plan." (Ex. 1003 ¶ 86.) In paragraph 87, the Declarant states, in part, that "[t]here are numerous combinations of different amounts of tooth movement in the arch and at different stages of tooth movement." (*Id.*, ¶ 87.) In paragraph 88, the Declarant states, in part, that "one of ordinary skill in the art would understand that there is nothing particularly unique about each 'pattern' [in the '444 patent]." (*Id.*, ¶ 88.) And in paragraph 89, the Declarant relies on Burstone (Ex. 1009, 2) to show "a step-by-step protocol for moving teeth in a 'computerized wax setup.'" (Ex. 1003 ¶ 89.) But the Declarant does not provide any explanation as to how and why a POSA would have combined Chishti'511's alleged round-tripping with Chishti'876's alleged staggering without using the claimed invention as a "blueprint." These

paragraphs of the Declaration also do not provide an explanation as how and why a POSA would be able to resolve Chishti'876's explicit disclosure that "round-tripping" is highly undesirable.

Accordingly, paragraphs 72-73 and 86-89 of the Declaration do not cure the fact that, absent hindsight reconstruction, a POSA would not been motivated to combined Chishti'511's alleged round-tripping with Chishti'876's alleged staggering to teach the Staggering and Round Tripping features of claim 1.

In the end, the Petition fails to meet the requirements of Rules 104(b)(4)-(5) and falls far short of meeting its burden of proving unpatentability.

I. Petitioner presents two grounds that are redundant without adequate explanation as to why both grounds are necessary. (All Grounds)

Petitioner has the burden to explain "why [one reference] is more preferred for satisfying some elements, while [another reference] is more preferred for satisfying some other elements." *Oracle Corp. v. Clouding IP, LLC*, IPR2013-00088, Paper 13, 3 (P.T.A.B. June 13, 2013). Without the required explanation, redundant grounds are "not all entitled to consideration" because they are "contrary to the regulatory and statutory mandates" for "just, speedy, and inexpensive" resolution. *Liberty Mutual Ins. Co. v. Progressive Casualty Ins. Co.*, CBM2012-00003, Paper 7, 2 (P.T.A.B. Oct. 25, 2012).

Here, Petitioner asserts two grounds, with Ground 1 based on Chishti'876

alone and Ground 2 based on a combination of Chishti'511 and Chishti'876 to allegedly teach all claims at issue. (Pet., 22.) ("Chishti '876 teaches every element of the claims."); (*Id.*, 46.) ("Taken together, Chishti '511 and Chishti '876 teach every element of the claims.") However, Petitioner does not provide any explanation as to why Chishti'876 is preferred over its combination of Chishti'511 and Chishti'876 or vice versa. In fact with respect to Ground 2, Petitioner relies on Chishti'876 to fill numerous gaps of Chishti'511, leaving the Board and Patent Owner guessing as to why Petitioner even asserted Ground 1. (*Id.*, 50, 56-59.) (relying on Chishti'876 in Ground 2 for at least claims 1, 6-12, 14.) Without Petitioner's explanation, these grounds are at least vertically redundant, because Chishti'876 and Chishti'511 are applied both in partial and in full combination. *Liberty Mutual Ins. Co.*, CBM2012-00003, Paper 7, 3.

Accordingly, because these grounds are redundant, the Board should deny institution of at least one ground.

IV. Conclusion

In sum, Petitioner does not establish a reasonable likelihood to prevail on any ground, nor did the Petitioner adequately explain its grounds in its Petition. For these reasons, institution should be denied.

Respectfully submitted,

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CERTIFICATION OF WORD COUNT

The undersigned hereby certifies that the portions of the above-captioned
PATENT OWNER'S PRELIMINARY RESPONSE PURSUANT TO 37
C.F.R. § 42.107 specified in 37 C.F.R. § 42.24 have 12,158 words, in compliance
with the 14,000 word limit set forth in 37 C.F.R. § 42.24(b)(1). This word count
was prepared using Microsoft Word 2010.

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CERTIFICATION OF SERVICE (37 C.F.R. §§ 42.6(e), 42.105(a))

The undersigned hereby certifies that the above-captioned **PATENT OWNER'S PRELIMINARY RESPONSE** and all associated exhibits were served electronically in their entireties on November 10, 2017, upon the following parties by email:

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